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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,446	07/02/2003	Dennis A. Kramer	9501-72886	5436
23643	7590	03/08/2004	EXAMINER	
BARNES & THORNBURG 11 SOUTH MERIDIAN INDIANAPOLIS, IN 46204			NGUYEN, TU MINH	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 03/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/612,446	Applicant(s) KRAMER, DENNIS A.	
	Examiner Tu M. Nguyen	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/31/2003, 11/3/2003, 1/28/2004.</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The disclosure is objected to because on page 1, lines 10 and 12, "XX/XXX,XXX" should be replaced with the actual serial number of each copending application. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 8, 9, 13, 14, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Parsons (U.S. Patent 4,735,186).

Re claims 1, 8, and 13, as shown in Figure 1, Parsons discloses a fuel reforming system and a method of operating a power system and said fuel reforming system, the method comprising the steps of:

- operating a turbocharger so as to produce pressurized air (lines 51-52 of column 1), and

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- advancing a reformat gas from a fuel reformer (5) to a component (2) with the pressurized air (lines 51-52 of column 1).

Re claims 2 and 3, the reformat gas in the method of Parsons comprises a hydrogen-rich gas, and the reformat gas advancing step comprises advancing the hydrogen-rich gas to the intake (3) of the engine with the pressurized air.

Re claims 9, 14, and 17, in the system and method of Parsons, the fuel reformer (5) has a reformat gas outlet, and the reformat gas outlet is fluidly coupled to an intake (3) of an internal combustion engine (2), wherein the advancing step comprises advancing the reformat gas from the fuel reformer to the intake of the engine with the pressurized air.

4. Claims 1, 6, 8, 9, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Lamm (U.S. Patent 6,311,650).

Re claims 1 and 8, as depicted in the Figure, Lamm discloses a fuel reforming system and a method of operating said system, the method comprising the steps of:

- operating a turbocharger (22, 23) so as to produce pressurized air, and
- advancing the pressurized air (25, 26) through a fuel reformer (6).

Re claims 6 and 11, in the method of Lamm, the turbocharger has a turbine assembly (23), and the operating step comprises driving the turbine assembly with exhaust gases from an internal combustion engine (2).

Re claim 9, in the system of Lamm, the fuel reformer (6) has a reformat gas outlet, and the reformat gas outlet is fluidly coupled to an intake (17) of an internal combustion engine.

5. Claims 1, 6, 8, 10, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Wakamoto (U.S. Patent 5,894,728).

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Re claims 1 and 8, as shown in Figures 1 and 3, Wakamoto discloses a fuel reforming system and a method of operating said system, the method comprising the steps of:

- operating a turbocharger (see line 16 of column 6 and claim 49) so as to produce 'pressurized air, and
- advancing the pressurized air through a fuel reformer (60) (lines 15-18 of column 6).

Re claims 6 and 11, in the method and system of Wakamoto, the turbocharger has a turbine assembly (not shown but inherently must have), and the operating step comprises driving the turbine assembly with exhaust gases from an internal combustion engine.

Re claim 10, in the system of Wakamoto, the fuel reformer (60) has a reformat gas outlet, and the reformat gas outlet is fluidly coupled to an emission abatement device (3).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakamoto as applied to claim 1 above, in view of Parsons.

The method of Wakamoto discloses the invention as cited above, however, fails to disclose that the reformat gas comprises a hydrogen-rich gas, and the reformat gas advancing

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step comprises advancing the hydrogen-rich gas to the emission abatement device with the pressurized air.

As illustrated in Figure 1 and indicated on lines 51-52 of column 1, Parsons teaches a fuel reformer (5) that generates a hydrogen-rich gas; and a means to advance the hydrogen-rich gas to a target component with a pressurized air provided by a turbocharger. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the fuel reformer and the means of Parsons in the method of Wakamoto, since the use thereof would have provided an effective means to deliver an active reductant to the emission abatement device.

8. Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakamoto as applied to claims 1 and 8, respectively, above, in view of Bromberg et al. (U.S. Patent 6,560,958).

The method and system of Wakamoto disclose the invention as cited above, however, fail to disclose that the fuel reformer comprises a plasma fuel reformer.

As shown in Figure 3, Bromberg et al. teach a NO_x emission abatement system for a dual adsorber catalysts (32, 42) in parallel, comprising a plasma reactor (14) to reform a mixture of at least HC and air into a reformat gas that is highly active and ideally suited for use as a reductant (lines 32-38 of column 1 and lines 26-30 of column 5). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the plasma reactor of Bromberg et al. in the method and assembly of Wakamoto, since the use thereof would have provided a reductant with a desired mixture and less harmful sulfur compounds to optimize the reduction of NO_x emission.

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9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parsons as applied to claim 13 above, in view of Wakamoto.

The method of Parsons discloses the invention as cited above, however, fails to disclose that the advancing step comprises advancing the reformat gas with the pressurized air from the fuel reformer to an emission abatement device.

As shown in Figures 1 and 3, Wakamoto teaches the supply of a reformat reductant generated by a reforming reactor (60) to an emission abatement device (3) to reduce NO_x in the exhaust gas (lines 19-44 of column 5). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching of Wakamoto in the method of Parsons, since the use thereof would have reduced the emission of harmful NO_x into the atmosphere.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parsons as applied to claim 13 above, in view of official notice.

The method of Parsons discloses the invention as cited above, however, fails to specifically disclose that the turbocharger has a turbine assembly, and the operating step comprises driving the turbine assembly with exhaust gases from an internal combustion engine.

It is well known to those with ordinary skill in the art that the turbocharger in Parsons has a turbine assembly which is driven by the exhaust gases from the internal combustion engine. Therefore, such disclosure by Parsons is notoriously well known in the art so as to be proper for official notice.

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Prior Art

11. The IDS (PTO-1449) filed on November 3, 2003, October 31, 2003, and January 28, 2004 have been considered. An initialized copy of each is attached hereto.
12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of two patents: Houseman et al. (U.S. Patent 4,033,133) and Smith et al. (U.S. Patent 5,947,063) further disclose a state of the art.

Communication

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

Tu M. Nguyen

TMN

March 7, 2004

Tu M. Nguyen

Patent Examiner

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